

CLAIMS

1. Method for hot dip coating a metal strand (1), especially a steel strip, in which the metal strand (1) is passed vertically through a coating tank (3) that contains the molten coating metal (2) and through a guide channel (4) upstream of the coating tank, wherein an electromagnetic field is generated in the area of the guide channel (4) by means of at least two inductors (5) installed on both sides of the metal strand (1) in order to keep the coating metal (2) in the coating tank (3), and wherein an electromagnetic field superposed on the electromagnetic field of the inductors (5) is generated by means of at least two supplementary coils (6) installed on both sides of the metal strand (1) in order to stabilize the metal strand (1) in a central position in the guide channel (4), characterized by the fact that the center position of the metal strand (1) in the guide channel (4) is stabilized by the following sequence of steps in a closed-loop control system:

(a) measuring the position (s , s' , s'') of the metal strand (1) in the guide channel (4);

(b) measuring the induced current (I_{Ind}) in the inductors (5);

(c) measuring the induced current (I_{Korr}) in the supplementary coils (6); and

(d) influencing the induced current (I_{Korr}) in the supplementary coils (6) as a function of all of the parameters (s , I_{Ind} , I_{Korr}) measured in steps (a) to (c) to keep the metal strand (1) in a central position in the guide channel (4).

2. Method in accordance with Claim 1, characterized by the fact that the electromagnetic field is a polyphase traveling field generated by applying an alternating current with a frequency of 2 Hz to 2 kHz.

3. Method in accordance with Claim 1, characterized by the fact that the electromagnetic field is a single-phase alternating field generated by applying an alternating current with a frequency of 2 kHz to 10 kHz.

4. Method in accordance with any of Claims 1 to 3, characterized by the fact that the position (s , s' , s'') of the metal strand (1) in the guide channel (4) is determined inductively.

5. Method in accordance with any of Claims 1 to 4, characterized by the fact that the position (s, s', s'') is determined in an area of the guide channel (4) in which there is no effect or only an attenuated effect of the magnetic field of the inductors (5) and/or of the magnetic field of the supplementary coils (6).

6. Method in accordance with any of Claims 1 to 4, characterized by the fact that the position (s, s', s'') is determined in an area of the guide channel (4) in which an effect of the magnetic field of the inductors (5) and/or of the magnetic field of the supplementary coils (6) does exist.

7. Device for hot dip coating a metal strand (1), especially a steel strip, in which the metal strand (1) is passed vertically through a coating tank (3) that contains the molten coating metal (2) and through a guide channel (4) upstream of the coating tank, with at least two inductors (5) installed on both sides of the metal strand (1) in the area of the guide channel (4) for generating an electromagnetic field in order to keep the coating metal (2) in the coating tank (3), and

with at least two supplementary coils (6) installed on both sides of the metal strand (1) for generating an electromagnetic field superposed on the electromagnetic field of the inductors (5) in order to stabilize the metal strand (1) in a central position in the guide channel (4), characterized by measuring devices (7, 7', 7'', 8, 9) for measuring the position (s , s' , s'') of the metal strand (12) in the guide channel (4), the induced current (I_{Ind}) in the inductors (5), and the induced current (I_{Korr}) in the supplementary coils (6) and by automatic control devices (10) that are suitable for controlling the induced current (I_{Korr}) in the supplementary coils (6) as a function of the measured parameters (s , s' , s'' , I_{Ind} , I_{Korr}) in order to keep the metal strand (1) in a central position in the guide channel (4).

8. Device in accordance with Claim 7, characterized by the fact that the measuring device (7, 7', 7'') for determining the position (s , s' , s'') of the metal strand (1) in the guide channel (4) is an inductive pickup.

9. Device in accordance with Claim 7 or Claim 8, characterized by the fact that the measuring device (7, 7', 7'') for determining the position (s , s' , s'') of the metal strand

(1) in the guide channel (4) is installed within the extent of the inductors (5), as viewed in the direction of conveyance (R) of the metal strand (1).

10. Device in accordance with Claim 7 or 8, characterized by the fact that the measuring device (7, 7', 7'') for determining the position (s, s', s'') of the metal strand (1) in the guide channel (4) is installed outside the extent of the inductors (5), as viewed in the direction of conveyance (R) of the metal strand (1).

11. Device in accordance with any of Claims 7 to 10, characterized by the fact that the measuring device (7, 7', 7'') for determining the position (s, s', s'') of the metal strand (1) in the guide channel (4) is installed outside the extent of the supplementary coils (6), as viewed in the direction of conveyance (R) of the metal strand (1).

12. Device in accordance with any of Claims 7 to 11, characterized by the fact that several measuring devices (7, 7', 7'') for determining the position (s, s', s'') of the metal strand (1) in the guide channel (4) are installed in various places relative to the direction of conveyance (R) of the metal strand (1).